

Explore the role of bacteria in both disease and food microbiology

How is it that some bacteria help us create foods such as cheese, sauerkraut, kimchi, and yogurt, while others cause diseases such as cholera, leprosy, tuberculosis, and anthrax? How do we know a bacterium is the cause of a particular disease, and not its result? Use our Microbes and Health Kit to walk your students through Koch's postulates to reveal the cause of a new disease called "Yogurtiness" — an affliction of "healthy" milk that causes it to become acidic and thick. Your students join Robert Koch, Louis Pasteur, and other founders of modern microbiology in a search using microscopes, agar plates, and powers of observation to identify the bacteria used to produce yogurt.

CONCEPTS

- *Metabolic Pathways*
- *Microbial Cell Structure*
- *Koch's Postulates*
- *Epidemiology and Disease*

SKILLS

- *Microbial Culturing*
- *Microscopy*
- *Data Collection and Analysis*

Elucidate the source of disease

When bacteria are found in diseased humans, did the bacteria cause the disease or are they merely an after-effect? Challenge your students to use Koch's postulates, a standard of proof in the identification of bacterial disease agents, to identify the microbe guilty of "Yogurtiness" in milk.

Examine the roles of microbes in our environment

Metabolic reactions provide energy for bacteria as they change food into secreted waste products. In some cases, these waste products help create foods we eat. In other cases, bacterial growth causes disease. Students examine the risks and benefits of bacteria to understand their roles in the environment — from cheese to disease.

Expand to independent research

Appropriate for biology, microbiology, health science, and biotechnology classes, this kit can also be used for independent study. Students can culture microbes from other sources, study the effects of antibiotics, learn about growth curves, and research how well the postulates have held up over time.

What is the cause of “Yogurttness”?

Activities include

- Microscopic analysis of yogurt and milk
- Inoculation of agar plates with yogurt
- Inoculation of milk with colonies from agar plates
- Observation of colonies from freshly cultured yogurt

Kit content supports 32 students

- Ampicillin
- LB nutrient agar powder
- LB broth capsules
- *E. coli* strain HB101 K-12, lyophilized
- Petri dishes
- Cell culture tubes
- Inoculation loops
- Disposable plastic transfer pipets
- Curriculum, including teacher’s guide, student manual, and quick guide

Required accessories not included in kit

- Microwave or autoclave
- Incubator at 37°C
- Microscopes, slides, and cover slips
- pH paper
- Yogurt and milk
- Table sugar
- Distilled water

Timeline

Complete lab activities in three 45-minute class periods.

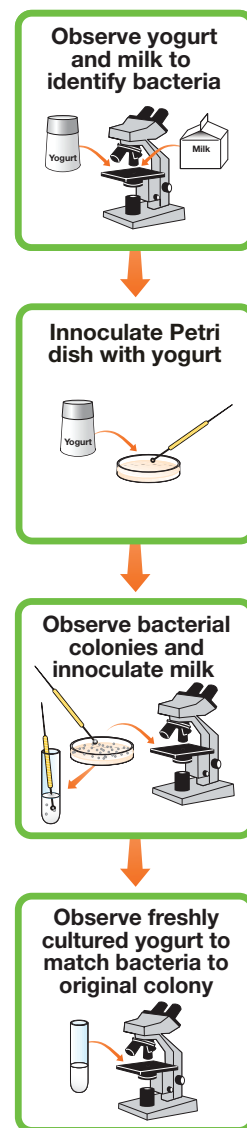
Ordering Information

Catalog #

Description

1665030EDU Microbes and Health Kit

Refill components are also available.



Call **1-800-4BIORAD** (1-800-424-6723) or visit **bio-rad.com/microbeskit** for more information and classroom supports.

BIO-RAD is a trademark of Bio-Rad Laboratories, Inc. All trademarks used herein are the property of their respective owner.